

10043104.01402

- 1 1. A semiconductor package, comprising:
2 a substrate having a first surface and a second
3 surface;
4 a plurality of first grooves formed in the first
5 surface, the plurality of first grooves forming a plurality
6 of segments in the substrate;
7 a plurality of semiconductor dice mounted to the
8 second surface, each of the plurality of semiconductor dice
9 being mounted to a corresponding segment;
10 an encapsulant formed onto each of the plurality of
11 semiconductor die, the encapsulant having a plurality of
12 second grooves formed in the encapsulant to correspond with
13 the plurality of first grooves; and
14 a plurality of break points formed from the first
15 and second grooves to separate individual ones of the
16 plurality segments from the substrate.
- 1 2. The semiconductor package of claim 1, wherein
2 the substrate is formed from ceramic.
- 1 3. The semiconductor package of claim 1, wherein
2 the encapsulant is formed from a bismaleimide triazine
3 resin.
- 1 4. The semiconductor package of claim 1, wherein
2 the plurality of first and second grooves are formed at an
3 angle.
- 1 5. The semiconductor package of claim 1, wherein
2 the package is one of a ball grid array and a fine-pitched
3 ball grid array package.

1 6. The semiconductor package of claim 1, wherein
2 the plurality of semiconductor dice are electrically
3 connected to the substrate.

1 7. A method for singulating a semiconductor
2 package, comprising:
3 providing a substrate having a first surface and a
4 second surface;
5 forming a plurality of first grooves in the first
6 surface to separate the substrate into a plurality of
7 segments.
8 mounting a semiconductor die to each of the
9 plurality of segments;
10 forming an encapsulant over each of the segments,
11 the encapsulant having a plurality of second grooves
12 corresponding to the plurality of first grooves;
13 forming a plurality of break points from the first
14 and second grooves; and
15 separating each of the plurality of segments from
16 the substrate at a corresponding break point.

1 8. The method of claim 7, wherein the package is
2 one of a ball grid array and a fine-pitched ball grid array
3 package.

1 9. The method of claim 7, wherein the substrate is
2 formed from a ceramic material.

1 10. The method of claim 1, wherein the encapsulant
2 is formed from bismaleimide triazine resin.

1 11. The method of claim 1, wherein the separating
2 step comprises shearing or punching the plurality of
3 segments from the substrate.

Att
no

10043104.011402